

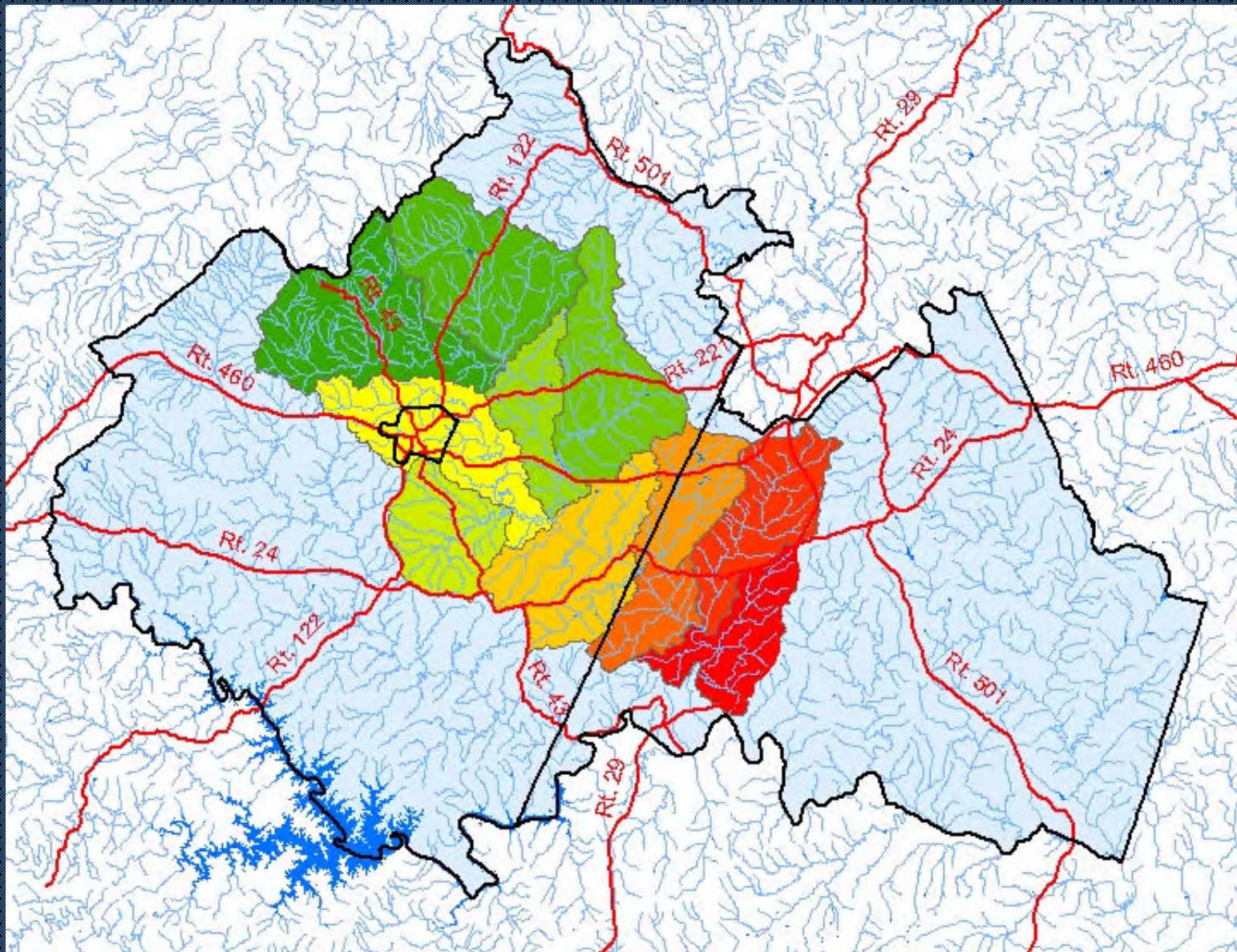


# Peaks of Otter

## Soil & Water Conservation District

Serving Bedford County, and the  
City of Bedford





Big Otter River Watershed spans Bedford and Campbell Counties



# Before Project





# After Project





# Before Project





# After Project





# Before Project





# Before Project





# After Project





# After Project





# Before Project





# Before Project





# After Project





















## Current Outhouse





## Completed RB-4P





## Completed RB-5 System





## RB-5 Re-Seeding





# The Numbers

(September 2006-February 2013)

## **Agricultural TMDL :**

- 149 Cost-Share projects completed
- Cost-Share Paid: \$1,281,657.31
- 3,476 livestock animals have been excluded from 100.2 miles of stream bank
- Projects averaged \$369 per livestock animal

## **Residential TMDL :**

- 27 RB-1s (pump out)
- 7 RB-2s (sewer connection)
- 24 RB-3s (repair)
- 77 RB-4s (replacement)
- 16 RB-4Ps (pump replacement)
- 6 RB-5s (alternative)
- 157 completed projects
- \$477,936.83 Cost-share



# Agricultural Numbers for Little Otter/Buffalo Creek Watershed

(September 2006-February 2013)

## **Little Otter River:** (L26/RU53/54)

- 33 Cost-Share projects completed
- Cost-Share Paid:  
\$396,394.07
- 1,889 livestock animals have been excluded from 17.3 miles of stream bank

## **Buffalo Creek:** (L27/RU56)

- 8 Cost-Share projects completed
- Cost-Share Paid:  
\$79,201.90
- 157 livestock animals have been excluded from 2.2 miles of stream bank



# Residential Numbers for Little Otter/Buffalo Creek Watershed

(September 2006-February 2013)

## **Little Otter River:** (L26/RU53/54)

- 10 RB-1s
- 2 RB-2s
- 9 RB-3s
- 38 RB-4s
- 3 RB-4Ps
- 62 completed projects
- \$159,764.27 Cost-share

## **Buffalo Creek:** (L27/RU56)

- 4 RB-2s
- 5 RB-3s
- 7 RB-4s
- 4 RB-4Ps
- 3 RB-5s
- 23 completed projects
- \$101,016.80 Cost-share



# Final Thought









# How is the water quality in Big Otter R. watershed?

## Water Quality Trend Analysis

- Presented by Mary Dail, [mary.dail@deq.virginia.gov](mailto:mary.dail@deq.virginia.gov) -

- Utilized WQ2 software
- Plots the Interim Water Quality Standard (WQS) violation rate vs. Year
- Interim Water Quality Standard is 400 cfu fecal coliform/100 mL water
  - Used during the transition from fecal coliform WQS to E.Coli WQS
- Some data is translated from E.Coli (current WQS) to fecal coliform
- Uses available water quality monitoring data from 1990-2011
- sample sizes vary by station
- not all data is continuous



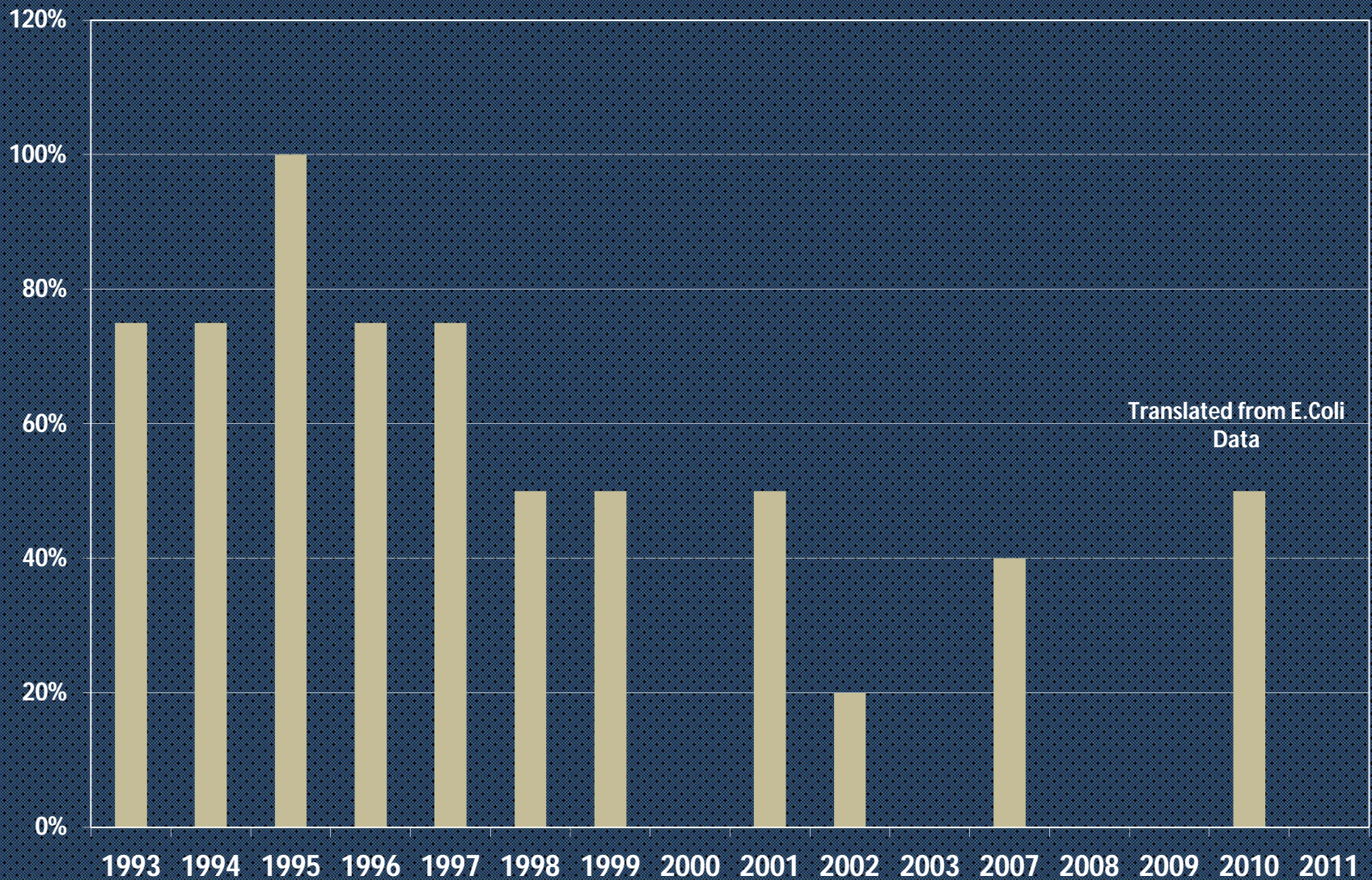
# Big Otter River Watershed

## Proposed Implementation Plan Monitoring Stations





# Fecal Coliform Interim Standard (400 cfu/100mL) Violation Rate at Sheep Creek station 4ASEE003.16 (1990 – 2011)





# Station 4ASEE003.16, FecalColiform

Tau = -0.489362, Ind-P = 0.001377, Dep-P = 0.005674, Slope = -103.512 (Record sheeptrend)

Datafile: tinkers, Dataset: sheep3, # seasons: 2, Lowess Proportion (raw data): 0.15

FecalColiform

Downward trend

Data is statistically significant

Observations: 30

From (yr): 1993

Through (yr): 2011

Median: 379.20381

Minimum: 33.62826

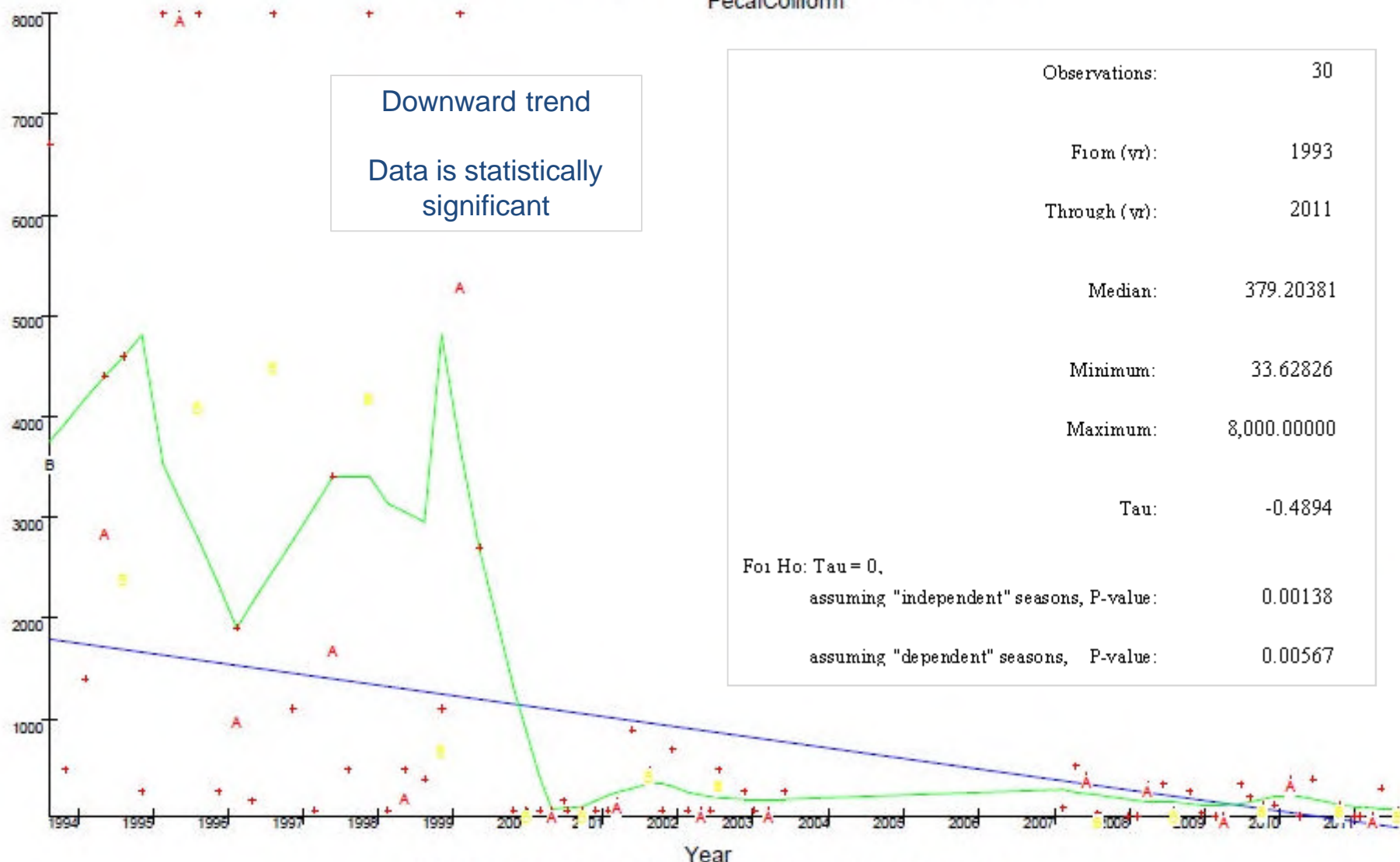
Maximum: 8,000.00000

Tau: -0.4894

For Ho: Tau = 0,

assuming "independent" seasons, P-value: 0.00138

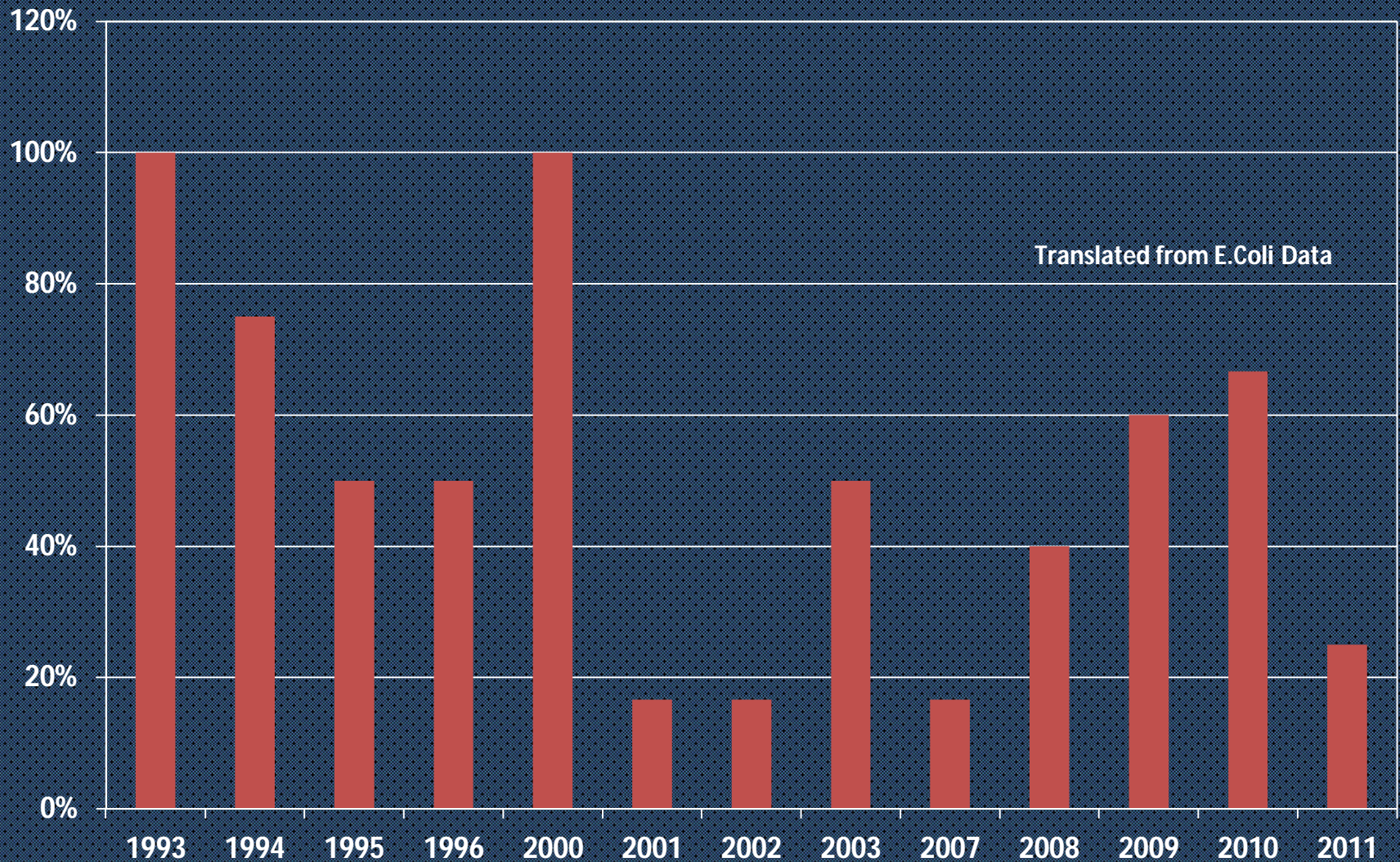
assuming "dependent" seasons, P-value: 0.00567



NOTE: Original Data are red. Reduced to medians data are colored symbols.



# Fecal Coliform Interim Standard (400 cfu/100mL) Violation Rate at Machine Creek station 4AMCR004.60 (1990 – 2011)

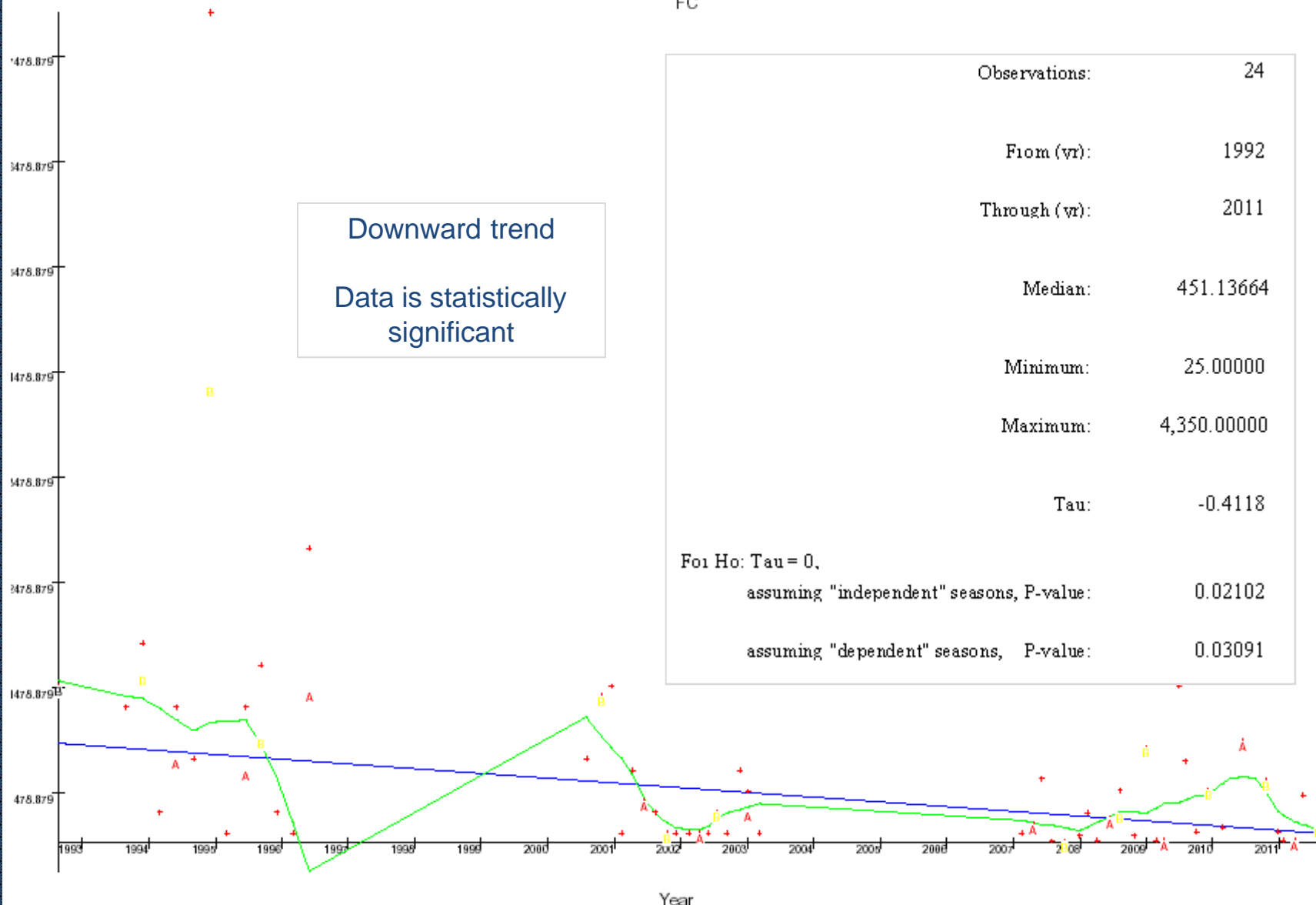




Station 4AMCR004.60, FC  
 Tau = -0.411765, Ind-P = 0.021020, Dep-P = 0.030915, Slope = -45.0807 (Record machine)  
 Datafile: linker, Dataset: machine, # seasons: 2, Lowess Proportion (raw data): 0.15  
 FC

Downward trend  
 Data is statistically significant

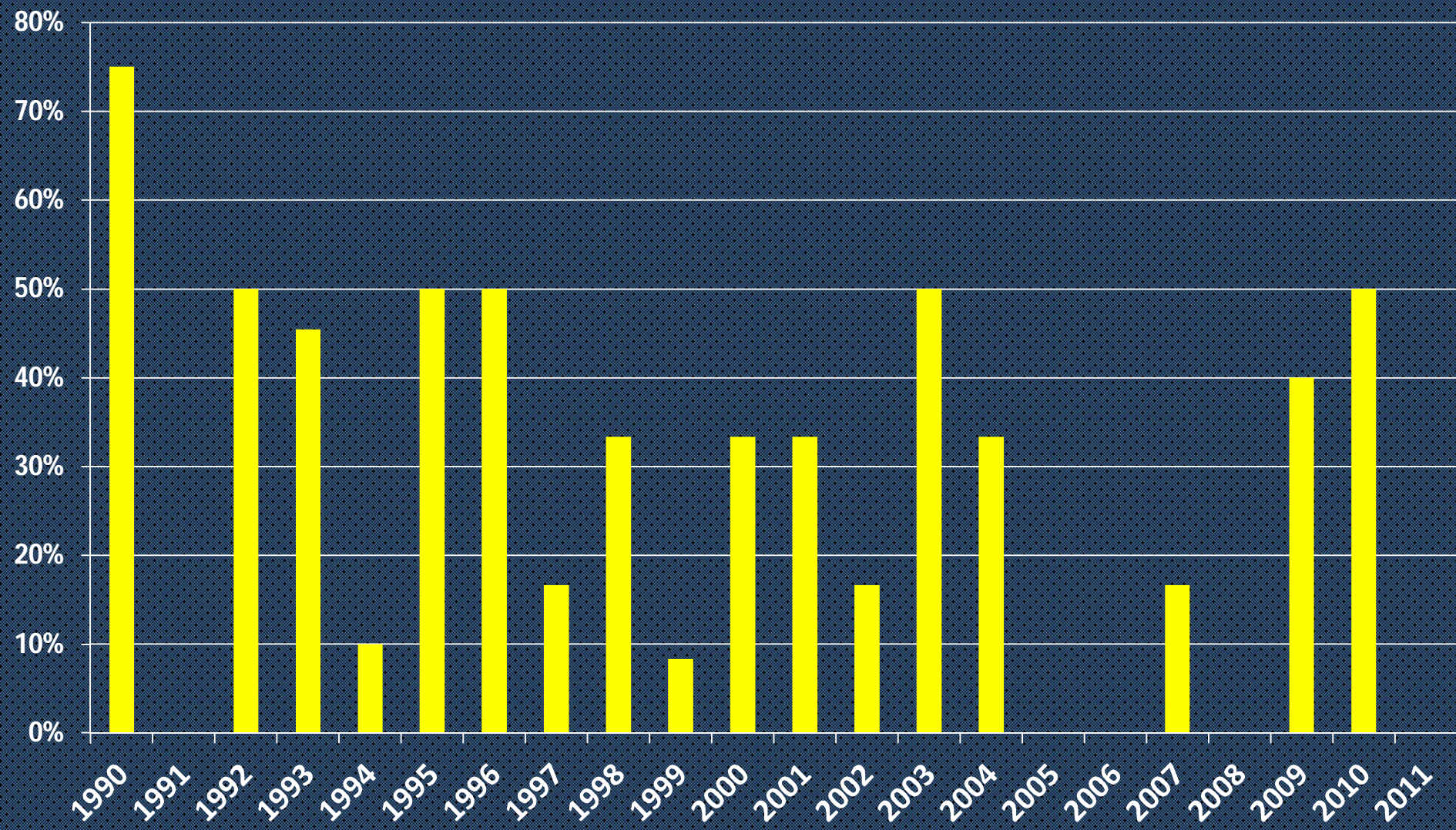
Observations: 24  
 From (yr): 1992  
 Through (yr): 2011  
 Median: 451.13664  
 Minimum: 25.00000  
 Maximum: 4,350.00000  
 Tau: -0.4118  
 For Ho: Tau = 0,  
 assuming "independent" seasons, P-value: 0.02102  
 assuming "dependent" seasons, P-value: 0.03091



NOTE: Original Data are red. Reduced to medians data are colored symbols.



# Fecal Coliform Interim Standard (400 cfu/100 mL) Violation Rate at Big Otter River station 4ABOR000.62 (1990 – 2011)





# Station 4ABOR000.62, FC

Tau = -0.263768, Ind-P = 0.067738, Dep-P = 0.130981, Slope = 0 (Record bor00062trend)

Datafile: tinkr, Dataset: bor00062, # seasons: 2, Lowess Proportion (raw data): 0.15

FC

No trend

Data is statistically significant

Observations: 86

From (yr): 1990

Through (yr): 2011

Median: 115.00000

Minimum: 25.00000

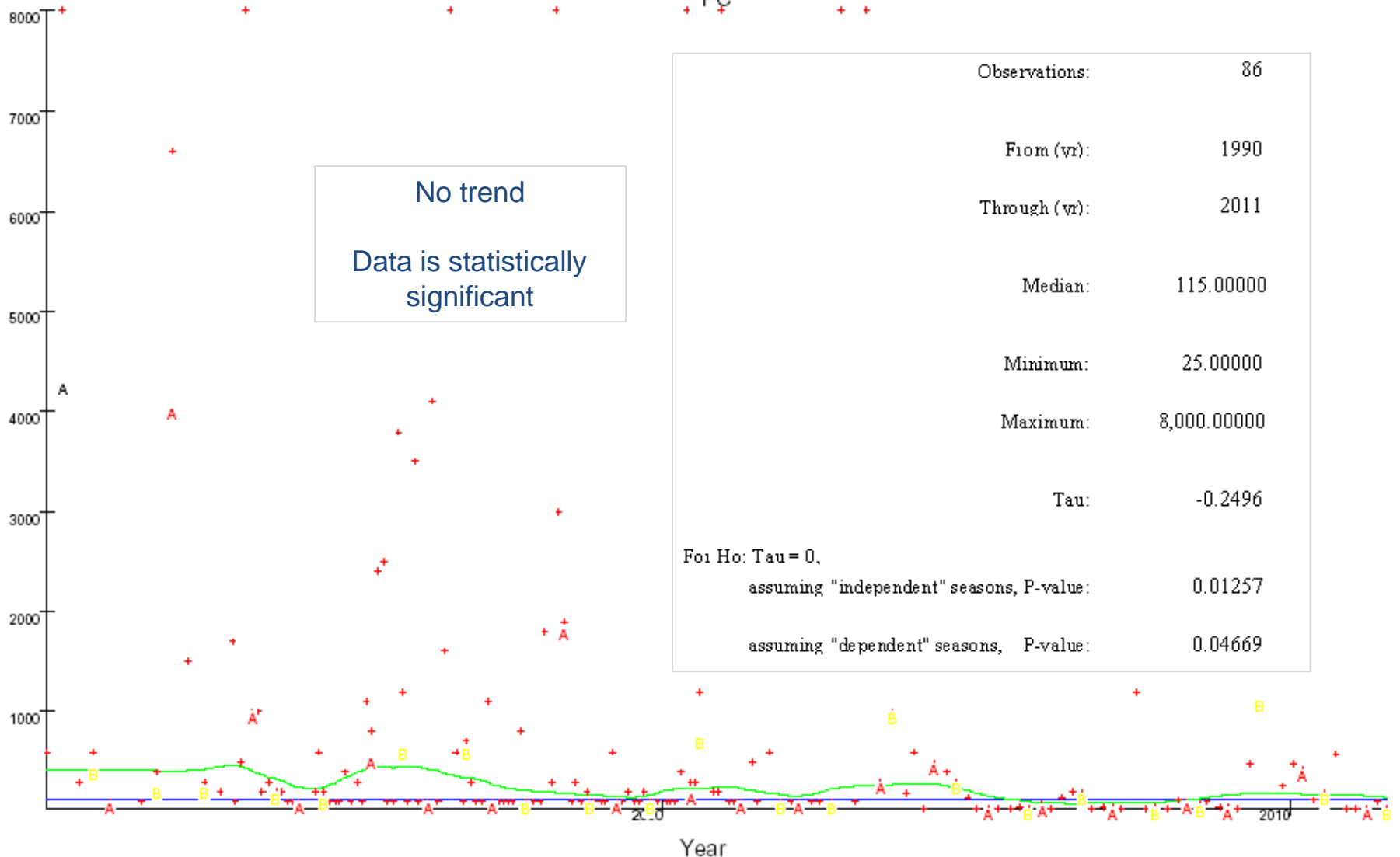
Maximum: 8,000.00000

Tau: -0.2496

For Ho: Tau = 0,

assuming "independent" seasons, P-value: 0.01257

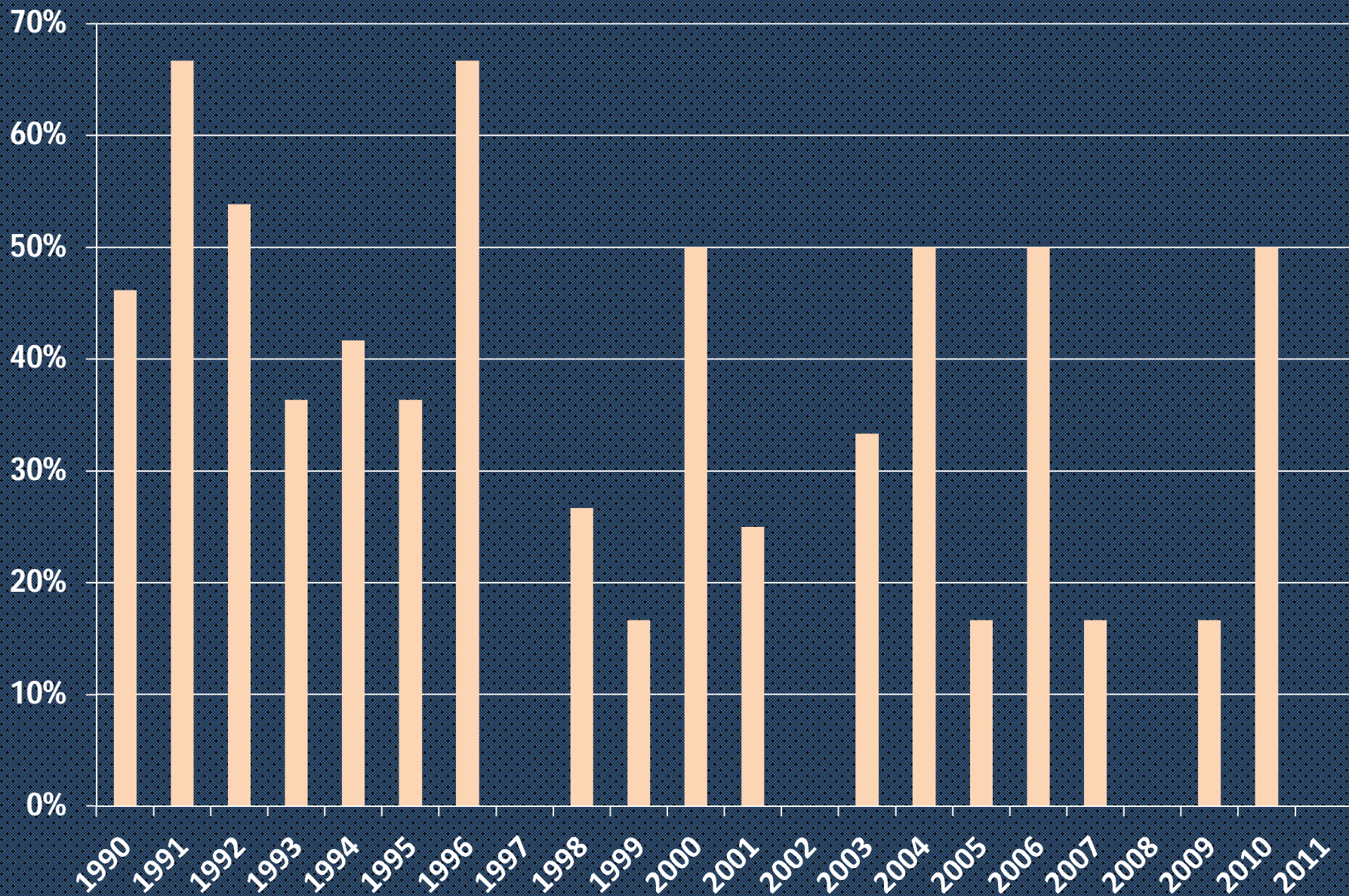
assuming "dependent" seasons, P-value: 0.04669



NOTE: Original Data are red. Reduced to medians data are colored symbols.



# Fecal Coliform Interim Standard (400 cfu/100 mL) Violation Rate at Little Otter R. station 4ALOR014.75 (1990 – 2011)



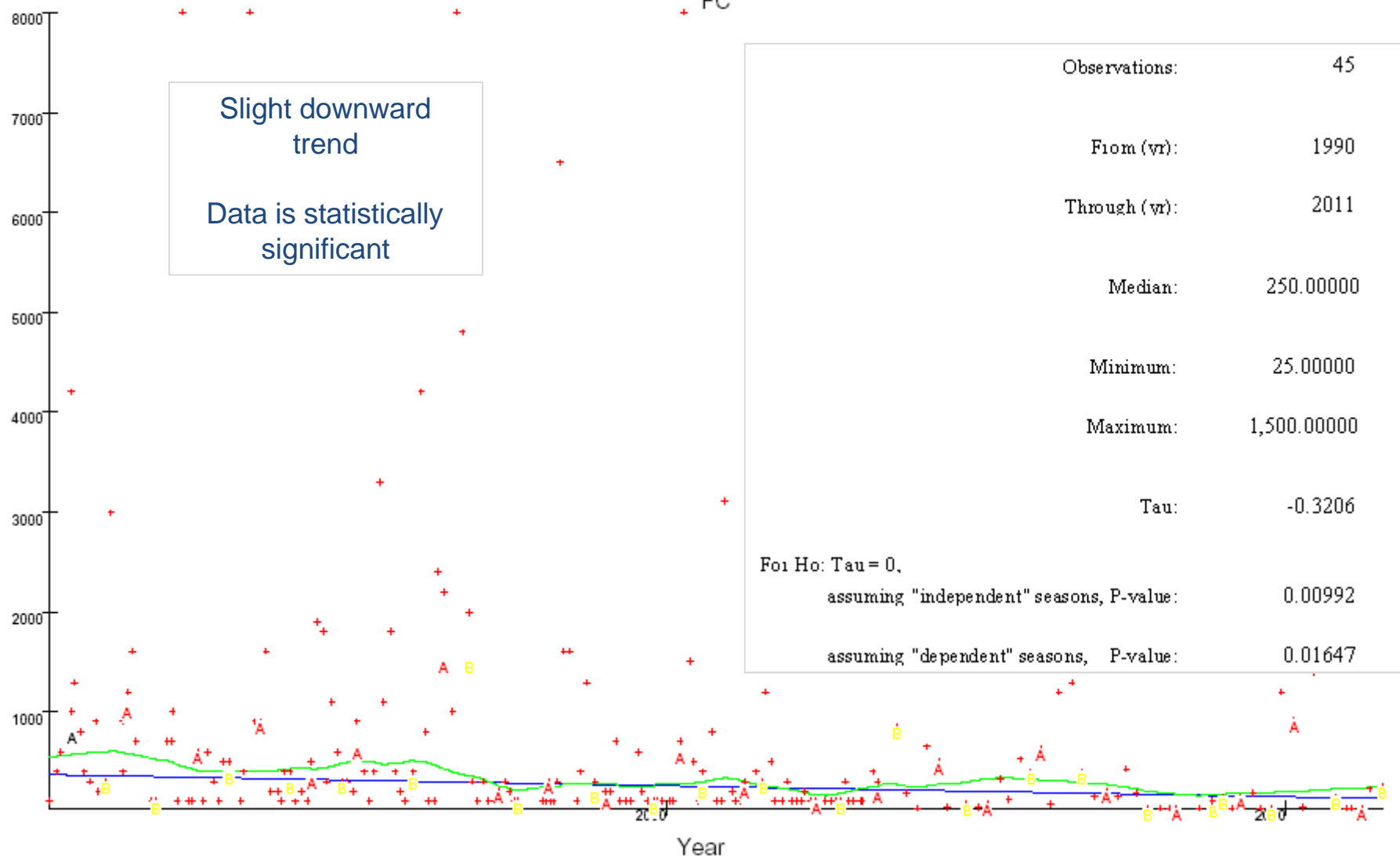


# Station 4ALOR014.75, FC

Tau = -0.320574, Ind-P = 0.009925, Dep-P = 0.016471, Slope = -11.1111 (Record LOR\_trend)

Datafile: tinkr, Dataset: LOR, # seasons: 2, Lowess Proportion (raw data): 0.15

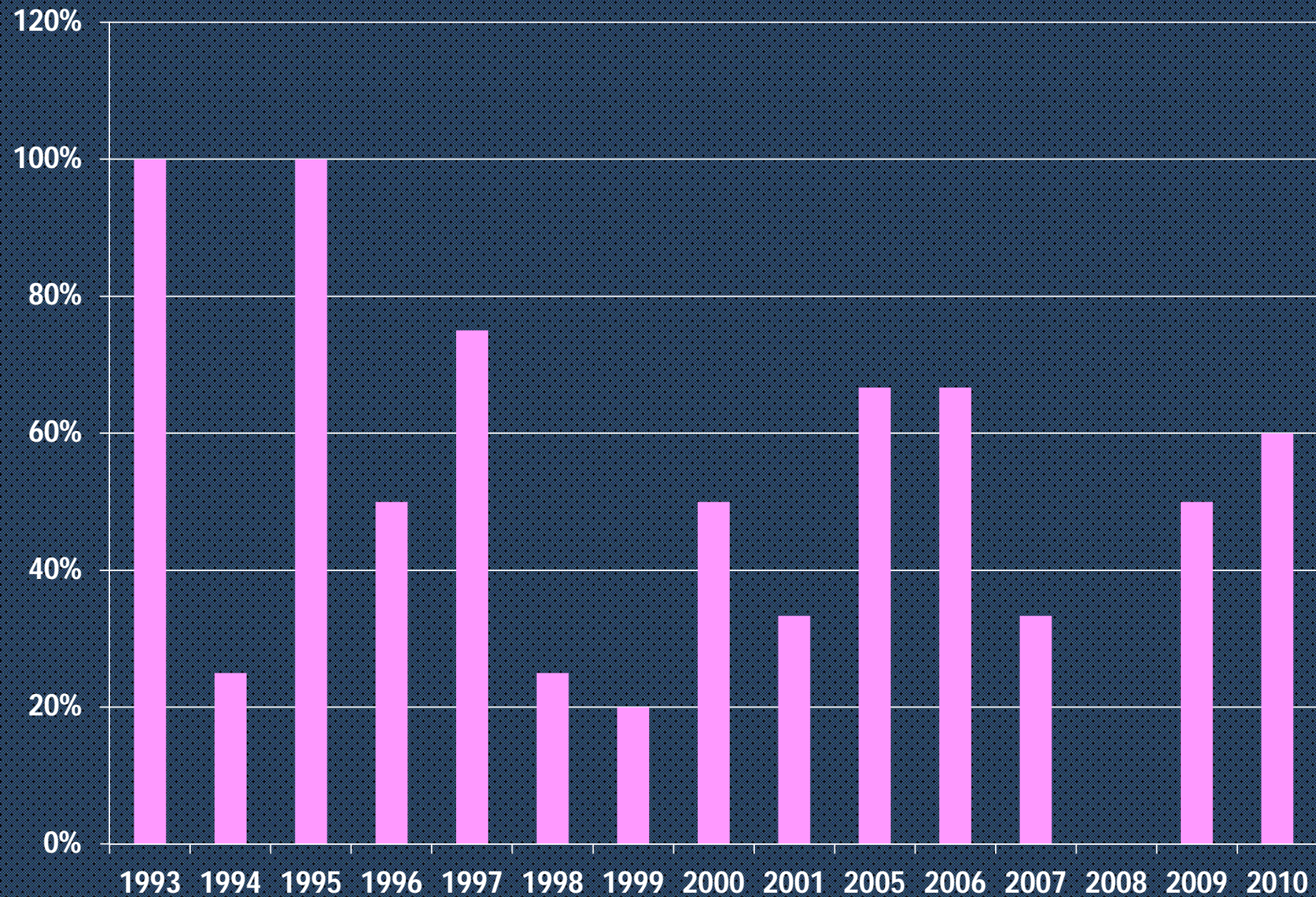
FC



NOTE: Original Data are red. Reduced to medians data are colored symbols.



# Fecal Coliform Interim Standard (400 cfu/100mL) Violation Rate at Elk Creek Station 4AECR003.02 (1990 – 2011)



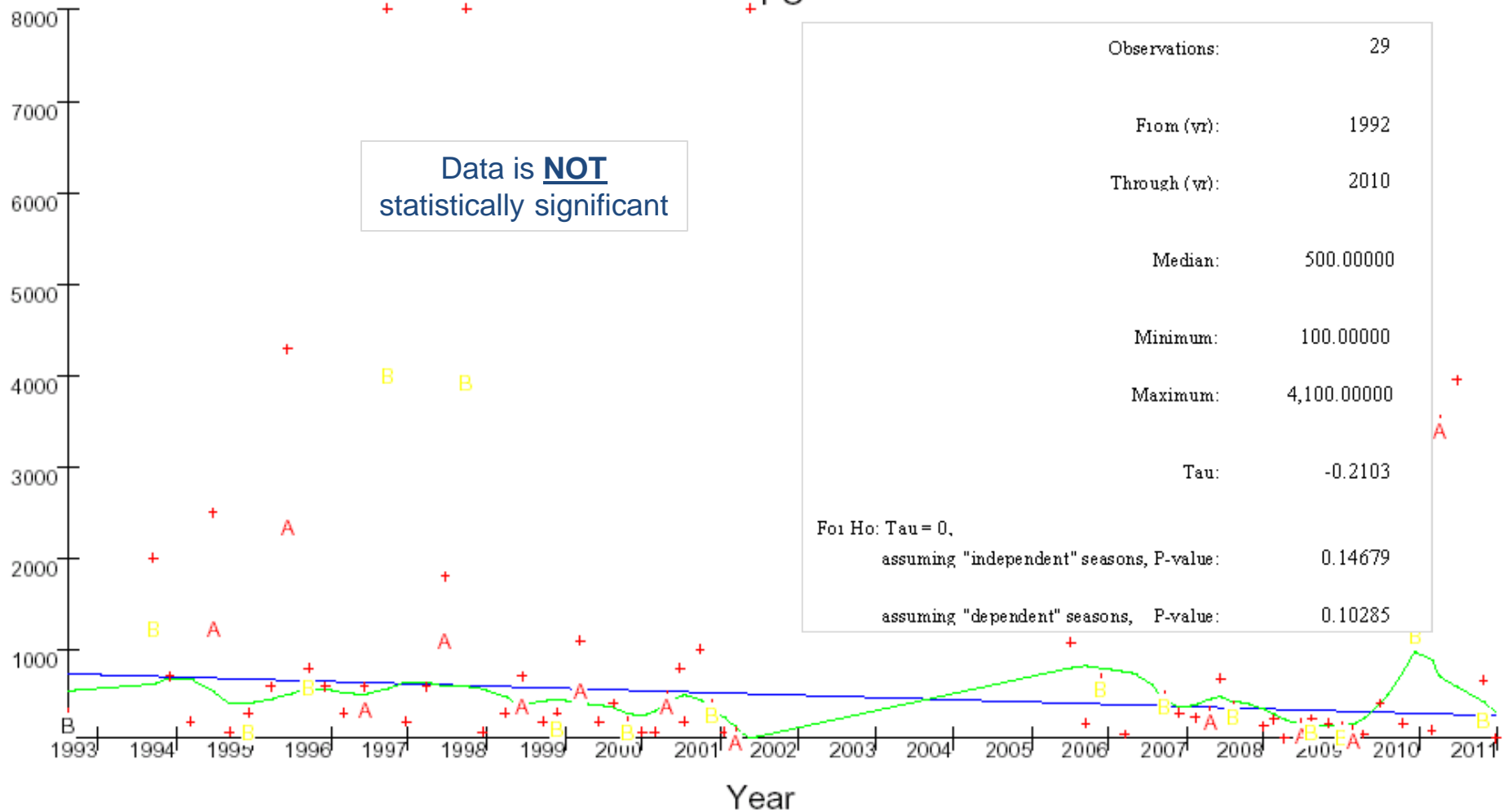


# Station 4AECR003.02, FC

Tau = -0.210256, Ind-P = 0.146793, Dep-P = 0.102852, Slope = -24.8034 (Record Elk)

Datafile: tinker, Dataset: Elk, # seasons: 2, Lowess Proportion (raw data): 0.15

FC



NOTE: Original Data are red. Reduced to medians data are colored symbols.



# Conclusions

- We are seeing water quality improvement as a result of the Soil and Water Conservation District's efforts and willingness of property owners to participate
- Installation of additional Best Management Practices will improve the sedimentation problems in Little Otter River and Buffalo Creek watershed
- Stay tuned for more information about the Clean-up Plan for the Little Otter River and Buffalo Creek watersheds!